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Liew, Choong-Chin

<120> Method for the Detection of Gene Transcripts in Blood and Uses  
Thereof

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<150> US

<151> 2000-01-04

<150> US 60/115,125

<151> 1999-01-06

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<170> PatentIn version 3.2

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aacgttga taaatcttac gtcgtcttat atattaagtt tttgtggagg atcggataag 240

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25 gaaaaanttt tccggggggc ccaccggga agggntnccg gggaaggg 168

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cccacattc cattttaat atatactgt cttacaaat attataatat gttttaa 180

40 atgttcacag aagcacctgg tctgtgaatg gcatgccagc attaaaaaa ataagcattc 240

tttgaatata tatttagttt ttaattgtg taggaaaatc aaagccagag ggagtagaaa 300

caaaatttgt gattttctaa atactcttg gctgcaggga agaaaccag tcccaggcga 360

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438

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 15 aaagggggaa ggcccccaa accggggggg gggnaaaaag gtgggtttcc cccttttcc 180  
 aattccaaa accaatttc aaaaggnaaa ccaacnttc caaaatggg aaagg 235

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 45 caaattgggg ggnaaaccaa atttaagggg ggaagggggg gncccccccg ggaaaggccc 180



aaggggggaa aattttccg ggggtgggtn gggggaacca atttaagggg ggggccccg 240

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15

ctgtacttga actctaaac tgttgagaa actcagtgt tactccaaca gattcatttc 180

aaatagctgt aaaaggtatg ttactccag aagaccagag ttgcttctt tgaacttctc 240

20

attccttggg cctaggaacc ctcatcacc tcacccaac gtcaaccag atcttctctt 300

ccataaacag cactccctca ggcccctgcc tgacacaggc atagactgtc atgttgatt 360

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tttaggcggc accccaacaa caccaggccc tactttttcc aaggncgggg aagcccatgg 180

45 gttctgggna acgggcaatg cgggcttgca acgggnggaa naaaaacagn cccaaaagaa 240

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242

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30 ggtgctcctg cgtttggact gtgcaggcct ctctatgct gatgcgtctc cccactcctg 180

agctaatttc tgcctgctc cttctgtgac atgtggcagc gtgggaaata gccactgtcc 240

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5 actagatttt actgtagatg gtagataaaa gtccagtga aagcaaagat gtgtaatgtt 180

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 35 actaatgaaa tgaaaatgaa atgganntga tgagatgaga agaantgctg agatgagata 420  
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ccngnctatc tactganga tgattgncag ngccnntggg tggcacnang ggnactgatg 360

25 ancancactg accctgccga cgccagangc cgcanatccg gagantncat gngacnatat 420

aggttaccnc cttcnaccgg gcancaatct gcttctatgg tgaatgcaga ccatntagaa 480

ntctntcnct ataggcatga ttttnnncag tgcgtcagcc tganaanga ancnnacttt 540

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 15 agatgaatga tgaaatgaaa tgatgagatg agatgatgaa atgaaatggt gagatgaaat 240  
 gatgagatga aatgaaatag tgaaatgaaa ttgaaataaa atcgaaatga gagatgaaat 300  
 gatgagatga tgaaattgat gaaatgatga gatgtgatga gatgaaatga tgagatgaga 360  
 20 tgagatgaca tgaaataatg aaatgaaatt gaaatgagat aagatacgag ctgagatgca 420  
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 cacag 125  
  
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 35 aaatgaatct gagatgaaat gagatgaaaa ntgatacgaa aaatgatata aaaaatatga 180  
 cctgagatga aatgagatga aaaatgatac gaaaaatgat ataaaaata tgacatgaaa 240  
 40 tgaaatgaga tgatatgaaa tgacataatg aaatgatgaa ttgatgatat tgaaatgaaa 300  
 ttgaaagatg agatgaaatg atgagatgaa atgaaatgtt gaaatgatga agagatgtga 360  
 catgaaatga gctgaaatga gatgaaatga aatgagatta aatgatgaga tgaaaaatga 420  
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 gaaatgagat gaaataaaat aatgaaatga tgaaataatg aaatgaaaat gagatggaaa 180  
 30 tgatgagatg agaagaaatg atgagatgaa atgatgaaat gatgagatga ganaaaatga 240  
 gatgaaatga tgagatgaga tgaaatatga tgagttgaaa tgacataatg aatgaaatga 300  
 35 tgaaatggaa taatgaaatg gaaatgatga gctgagatgc aatgagttga aatgagatga 360  
 aatgatgaaa tgatgagatg aaatgatgaa atgaaataat gaaatgagat gaaataaaat 420  
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cataaaatga gatgaaatga gatgtaatga tggaatgaga tgagatgaaa tgagatgaaa 180  
20 tgatagatga gataaaatga tgatatgaaa tgatgagatg aatgatgaga tgatgagatg 240  
aatgatgaaa tgaaatgatg agatgagatg atgaaatgaa atggtgagat gaaatgatg 299

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cgccatgaaa ttctgctcg attagcttac gttgtttgga tagaggccaa acaaggctgt 180  
45 tatcggtacg aggaatggat gttcgatttc gtagaatacg cctgagagac ggccaatact 240

ctcacgagag gcagcaggcg cgtaaattac ccaattacaa caagtagagg tagcgaagga 300

aaatatgagg ggtggcaagg tttgcctgt tacattctca aatggaagca aattagatat 360

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gtcattg 367

<210> 77

10 <211> 257

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atagaaatca ttatttctgt gggatggata attgggccaa attgtaaaat attttaacta 120

30 tcagtgtttg gggtttattt ttaaaagaat aggggtgccac cagatgttct ttagtggagg 180

agaaatgagg ccagagtgcac tgcctagaaa attaagttgg taaattaatc acttttttct 240

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 30 tattacaaa atattggac cattantaaa gantagggcc aaccnaatt ttcttgaaa 180  
 ttccgttaa atagccgta aatgtttta cccatttcat attggatacc ttaaattata 240  
 35 ataatggatt ttattgttaa attgtgtgtg tgtggtgtgt atgccctgtc ttctctctc 300  
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 35 ccttgatggt caagtattta agaccctatg cnaatatttt ttaccttttc taataaacca 120  
  
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ggccaggcct tccctttaa aaaaaatnac cgttttngg gggangnaac ctttaaagg 120

ggaaaanaaa tccttttaa anggaantcc aagggaagga ncctgnncaa nacttcccn 180

30 ccaataaaaa aaacntttt ggaaangggg aaa 213

<210> 81

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<400> 81

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tgatgaaatg agatgagatg agaagaaatg acttgatgag atgagataaa atgatgaaat 120

gaaatgaagt gaaatgaaat tgaaatgaga tgagatgaaa tgagataaaa tgatgagatg 180

15 aaatgagaag aaatgagatg aaatgatgaa atgatgagat gagatgaaaa atgatgggat 240

gagaaatgag atgaaatgat gggatgaaat gaaatgaaat aatgaaataa tgaaatgaaa 300

20 tgaattgata atattgaagt gaaattgaaa gatgagattg gatgaaatga tgagatgaaa 360

tgaaatgttg aaatgaaatg aagagatgta acatgaaatg agctgaaatg atgagatgaa 420

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 25 gacctctgaa tgtattantg anncaagtga tagccaagat attttgaaga aaaatagata 120  
 ntagggacct gctctataag cccatcataa ttattatga agttataaca agtaaaacag 180  
 taaggtattt ggcatggaat agagaacca gaaacagacc caatgcatgg gtacaggata 240  
 30 taacacaggg aaatgaggga caatatatgg ttctgggata attattata tggggaaaat 300  
 aaagaaattg gatccctacc tcacacatac aaaaaaaatc ataattgaat taaaaacttg 360  
 35 catgtgaaag gaaagacttt aaaacattta gaaaaagtat tggaggctat gatcttgggg 420  
 taggaaagca ttctttttt tt 442  
  
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15 aggaaggaag gaagg 135

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aacttcctca gaaggacaag agacaaagaa gtgggggagg cctcctatc catagctgag 180  
35 agggtttatt cttgtggtt ctgctgtcag agcctttgga tgtctgatct gagatggagc 240  
  
aaccacagct agacagaact tttagattt tgggggggtt aaaaggcctc aagcaaattc 300  
  
40 taaaactttc ttgaacccc ctggcatagg ctcagtttcc ctgact 346

<210> 85  
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45 <212> DNA  
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<400> 85

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5 gaaaagaaaa tggtttttt tgccgaaatc aaccgggtaa 100

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10 <212> DNA

<213> Human

<400> 86

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15 gaaaagagga agaaacgctt ttaggagtt aaggattaaa gtaaaaatta tttgacata 120

attaccttt tttgtacca ctcttaaagg ccaggaacat atttgagaa gcctagtgt 180

20 atgtaacagt gtggggtttc a 201

<210> 87

<211> 531

25 <212> DNA

<213> Human

<400> 87

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tcttttacc cggcactcgg gtccaccctc gcggcaccag aggtattctc cggcgagtcg 180

35 ttaaccatcg caatgccga ccgagtttaa ggaccactcc ccaccttct cattagtaa 240

ggagaacgct actttacccc atagacggag aaatcgctac tcaactacca ggcgcgcgcc 300

gtcgagtccc tcttctctc ttatgcatt tagagcgctt tcgtaagagt tttccctaga 360

40 ttttctaag cgtagcgcgt ctactccaat gtttcgtta atccagcccg aactaacgcc 420

gcggaggagt cgatccgtct actcctatcc cgtcggctcg gatttactac aggagctaag 480

45 aaaacaaaa gtaccagccc taaaggaaag tcaaaggacg cccgtaaaaa a 531

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 5 <213> Human

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 aggaacgaac ccccttcat taccacgggc ccgcgtccgc ctcttctcc attcgcaaca 240  
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 gatagcaaag attaccagc ttctattcct cgtcccagag ccgagtaaatt cgaagtttat 360  
 20 agaggcggaa tccaaccatt caagagttat aacaagttat cggcactcgg gggatcagaa 420  
 tataaactta atgtccctt tatttcccg gacgccctt ttaaccatt ctctctatct 480  
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30 <221> misc\_feature  
<222> (798)..(798)  
<223> n is a, c, g, or t

<400> 96

35 gagatgaatg atgaaatgat gagatgagat gatgaaatga aatggtgaga tgaactgatg 60

aaatgaaatg aaataatgaa atgaaattga aataaaattg aaatgagatg agatgaaatg 120

atgagatgat gaaataaaat gatgaaatga gatgtgatga gatgaaatga ngagatgaaa 180

40 tgatgagatg agatgacatg aaataaatga aataatgaaa tcgaaatgag atgagaagat 240

acgagatgag atgaaatgat gagatgaaat gatgaaatga gataagatga aaagagttga 300

45 tgagatgatg agatgaaatg agatgaaaag agatgaaatg agatgaaatg aaatgatgag 360

atgaaatgag gtgaaatgaa attagatgaa acgtaatgag atgaaatgac ataatgaaat 420  
gaaaaaatga aatgaaataa tgaaatgagg tgaaattaaa tgagatgatg aaattaaatg 480  
5 atgaaatgaa ataatgaaat ggaaatgaaa tggaaatgat gagatgaatg atgagatgaa 540  
atgatgagat gagatgtatt gatgagagga aatgatgaga tgtaatgaaa tgagatgaaa 600  
tgaaatgagat gaaatggaat antggaangg aaattgattg gngatttgag atgaaatgag 660  
10 ntaaatgnga tgaattaatg atgagatgaa atgntgaatg ccgggggtggn tgagatgaat 720  
tgagttgaac cctgngatga atgaagattg nntgaatggt ggntgaatgt tgaatggntg 780  
15 gntggnanaa tgcctgtngg 800

<210> 97  
<211> 334  
20 <212> DNA  
<213> Human

<400> 97  
gatgaattga aatgaaatga aataatgaaa taatgaaatg agatgaaatg aaaagaaatg 60  
25 atgaaatgat attgaaatga aattgaaaga tgagatgatg agatgaaatg gtgaaatgtt 120  
gaaatgaaat gatgaaatga atagatgtga catgaaatga gctgaaatga tgagatcaaa 180  
30 tgaaatgaaa tgagattaaa tgatgagatg aaaactgatg aaaacttaaa tgatgaaata 240  
atgaaatgaa aatgaaatgg aaatgatgag atgagaagaa atgatgagat gagatgagat 300  
aaaatgagat gaaatgatga gatgaaatga tgag 334  
35

<210> 98  
<211> 100  
<212> DNA  
40 <213> Human

<220>  
<221> misc\_feature  
45 <222> (17)..(17)  
<223> n is a, c, g, or t

<400> 98

ttcaggccgt ctgctntac atatactatc gagaatggtg ctgtgcactc ataacaccgt 60

5 tgcttggtag acgcttttga acccttcagc gctgaaagta 100

<210> 99

<211> 500

10 <212> DNA

<213> Human

<220>

15 <221> misc\_feature

<222> (8)..(8)

<223> n is a, c, g, or t

<220>

20 <221> misc\_feature

<222> (361)..(361)

<223> n is a, c, g, or t

<400> 99

25 cccggganntt cggcccttat ggcccgggga aatgatgaga tgaaatgatg aatgagata 60

agatgaaaag agttgatgag atgatgagat gaaatgagat gaaaagagat gaaatgagat 120

gaaatgaaat gatgagatga aatgaggatga aatgaaatta gatgaaacgt aatgagatga 180

30 aatgacctaa tgaaatgaaa aatgaaatg aaataatgaa atgaggatgaa attaatgag 240

atgatgaaat taaatgatga aatgaaataa tgaaatggaa atgaaatgga aatgatgaga 300

35 tgaatgatga gatgaaatga tgagatgaga tctaataatg agaggagatg atgagatgaa 360

ntgagatgaa aagagatgaa atgagatgaa accgaaatga tgagatgaaa tgaggatgaaa 420

tgaaattaga tgaaacgtaa tgagatgaaa tgacataatg aaatgaaaaa atgaaatgaa 480

40 ataataatgaaat gaggtgaaat 500

<210> 100

45 <211> 397

<212> DNA

<213> Human

<220>

5 <221> misc\_feature  
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<223> n is a, c, g, or t

<220>

10 <221> misc\_feature  
<222> (39)..(39)  
<223> n is a, c, g, or t

<220>

15 <221> misc\_feature  
<222> (50)..(50)  
<223> n is a, c, g, or t

<220>

20 <221> misc\_feature  
<222> (56)..(56)  
<223> n is a, c, g, or t

<220>

25 <221> misc\_feature  
<222> (71)..(72)  
<223> n is a, c, g, or t

<220>

30 <221> misc\_feature  
<222> (97)..(97)  
<223> n is a, c, g, or t

<220>

35 <221> misc\_feature  
<222> (110)..(110)  
<223> n is a, c, g, or t

<220>

40 <221> misc\_feature  
<222> (177)..(177)  
<223> n is a, c, g, or t

<400> 100

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tccccctgaa nntctctaaa ccttaacttt ctggccnttt tgtttcagan atgcctaacc 120

ctcaggggggt cttttgttct ctacgcctaa aaacttaatc tgtttggaac aattccnttt 180

5 cctctctgta gaaattgacc tggccatggc tcctgtgaat gatacggttg ctattatccc 240

tgaacactgt aaaaatgaac ttgaaacag ttgggtagga cccaaacaga aaatgatgta 300

tggttgga atagtttagc tgaacattat gctttaatat ttactggcc attgcagcac 360

10 aggtttagaa atttatgttc ggctttttaa agtttta 397

<210> 101

15 <211> 132

<212> DNA

<213> Human

<220>

20 <221> misc\_feature

<222> (121)..(121)

<223> n is a, c, g, or t

25 <400> 101

gttaccta atgtttactct cattttcttt ttctttattt ttcatgtga aaataggaac 60

attaattgta ctactttcaa aagaattaat tgaagaaaga gagatacagg gtatctaggc 120

30 ngaggaagac cc 132

<210> 102

<211> 246

35 <212> DNA

<213> Human

<400> 102

gggggcttta gttataactg ggctaagcat aattgcgcta ccaattccat attatctcat 60

40 ggcactta atttataattg atatatataa taaaaaatc aatgcagata ttgatataat 120

aaaaatagat aatggtaatc caagcacgat ggtagccatc actctaattg ctttgggggtt 180

45 aacctataac ttattaagta aagtgccaga atggttcttt gacagtatta aaattaaaga 240



aaacag

246

<210> 103

5 <211> 18

<212> DNA

<213> Artificial Sequence

<220>

10 <223> forward primer of exon 1 of insulin gene used for quantitative RT-PCR analysis

<220>

15 <221> primer\_bind

<222> (1)..(18)

<400> 103

gccctctggg gacctgac

18

20

<210> 104

<211> 18

<212> DNA

25 <213> Artificial Sequence

<220>

<223> reverse primer of exons 1 and 2 of insulin gene used for quantitative RT-PCR analysis

30

<220>

<221> primer\_bind

<222> (1)..(18)

35

<400> 104

cccacctgca ggtcctct

18

40 <210> 105

<211> 24

<212> DNA

<213> Artificial Sequence

45 <220>

<223> forward primer of  $\beta$ MyHC gene used for quantitative RT-PCR

analysis

5 <220>  
 <221> primer\_bind  
 <222> (1)..(24)  
  
 <400> 105  
 gctggaacgt agagactccc tgct 24  
 10  
  
 <210> 106  
 <211> 24  
 <212> DNA  
 15 <213> Artificial Sequence  
  
 <220>  
 <223> reverse primer of  $\beta$ MyHC gene used for quantitative RT-PCR  
 analysis  
 20  
  
 <220>  
 <221> primer\_bind  
 <222> (1)..(24)  
 25  
 <400> 106  
 ggatccttcc agatcatcca cttg 24  
  
 30 <210> 107  
 <211> 20  
 <212> DNA  
 <213> Artificial Sequence  
  
 35 <220>  
 <223> forward primer of ANF used for quantitative RT-PCR analysis  
  
 <220>  
 40 <221> primer\_bind  
 <222> (1)..(20)  
  
 <400> 107  
 ggatttcaag aatttgctgg 20  
 45

<210> 108  
 <211> 20  
 <212> DNA  
 <213> Artificial Sequence

5

<220>  
 <223> reverse primer of ANF used for quantitative RT-PCR analysis

10 <220>  
 <221> primer\_bind  
 <222> (1)..(20)

<400> 108  
 15 gcagatcgat cagaggagtc 20

<210> 109  
 <211> 20  
 20 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> forward primer of APP used for quantitative RT-PCR analysis  
 25

<220>  
 <221> primer\_bind  
 <222> (1)..(20)  
 30  
 <400> 109  
 ggatgcttca tgtgaacgtg 20

35 <210> 110  
 <211> 19  
 <212> DNA  
 <213> Artificial Sequence

40 <220>  
 <223> reverse primer of APP used for quantitative RT-PCR analysis

<220>  
 45 <221> primer\_bind  
 <222> (1)..(19)

<400> 110  
tcattcacac cagcacatg

19

5

<210> 111  
<211> 21  
<212> DNA  
<213> Artificial Sequence

10

<220>  
<223> forward primer of ZFP used for quantitative RT-PCR analysis

15

<220>  
<221> primer\_bind  
<222> (1)..(21)

20

<400> 111  
cacargagrc arggtcaacg a

21

25

<210> 112  
<211> 22  
<212> DNA  
<213> Artificial Sequence

30

<220>  
<223> reverse primer of ZFP used for quantitative RT-PCR analysis

35

<220>  
<221> primer\_bind  
<222> (1)..(22)  
<400> 112  
ggattaaaat gaagcaccca ga

22